its properties can be examined with the greatest facility.

The apparatus required is very simple: let a pint glass-bottle, with a narrow mouth, be provided with a cork, through which a bent pewter tube, half an inch in diameter, passes tightly.

In the bottle place two ounces of small fragments of white marble; then quickly pour in sufficient muriatic acid to cover them: immediately insert the cork, with its tube, into the neck of the bottle; and then dip the end of the tube beneath the water in the trough: numerous bubbles will escape, which result from the strong effervescence that is taking place in the bottle: they are bubbles of carbonic acid gas, and may be collected in bottles filled with water, and inverted.

The theory of the action which produces the effervescence may be readily understood: marble is a compound of carbonic acid and lime: they are united by a certain degree of affinity; but muriatic acid has a greater affinity for lime than carbonic acid has, and therefore unites with it to form muriate of lime, and expels the carbonic acid in its pure state of vapour: this is a very instructive example of chemical affinity, and if sufficient muriatic acid be used, the whole of the marble will vanish, having yielded its lime to the muriatic acid, and its carbonic acid gas to the bottles in the trough."

Elements of Electro-Metallurgy. By ALFRED SMEE, F.R.S., &c. Third edition, enlarged. Longman and Co. 1851.

IN this book the student of electro-metallurgic principles and practice has his subject developed in a scientific form, which it would be well for him to peruse throughout before he attempts to dabble in electro-metallurgic experiments; otherwise, in place of finding this, as it really is, a pursuit both profitable and delightful, he may meet with such obstacles and reverses as may induce him to give up the attempt in despair and disgust. The subject is, nevertheless, even yet in its infancy, and only holds its place in science as a newly-organized branch yet to be ramified in a thousand directions into beautiful and fruitful results. In the meantime we have here a compendium of all that has been done, in the first place, in maturing the requisite apparatus and materials; and, in the next, in turning out those varied and beautiful works which render this new branch of manufacture as well as of science both a pleasure and a profit. The subjects more particularly treated of are,—galvanic batteries and other apparatus employed in reduction of metals, substances capable of receiving the metallic deposit, laws regulating the reduction of metals, electro-gilding, silver-plating, &c. the multiplication of coins and medals, copying of seals and plaster casts, multiplication of brasses, manufacture of moulds from fruits, vegetables, &c., application of electro-metallurgy to sculpture, bas-reliefs, and other purposes, multiplication of types, copper and steel plates, woodcuts and daguerreotypes, and on galvanic etching, electro-disruptive etching, and voltaic blasting. There is an appendix on "Electro-Metallurgic Patents," and the book is illustrated by electrotypes and numerous woodcuts. The present edition contains not only the results of the author's own experimental researches, but some account of the processes and experiments carried on by others, from which source alone this edition has been increased about one-sixth in bulk beyond the limits of those previously issued and now exhausted. We are glad to find that the author has expunged some unwise and erroneous expressions which appeared in the first edition.

The Mechanic's and Schoolboy's Steps to the Mathematics. By JOHN QUESTED. London: Rolfe and Fletcher.

The Art of Land Surveying explained by Short and Easy Rules. By the same. Second edition.

THESE "Steps to the Mathematics" will be found easy ones, even by the most short-witted, and though they will not take the climber high up into his subject, he will find, when he has ascended them, that he has cleared many obstructions, and is in a good position for a fresh flight.

A previous edition of Mr. Quested's little introductory book on land surveying has been already noticed by us.

Miscellanea.

HOUSES FOR LABOURERS.—You frequently advocate the cause of the industrious classes in your truly valuable work: you may therefore not object to insert the following few lines. Many gentlemen are *professors* of philanthropy; but when the touchstone is applied, how frequently do they prove repellants. In the matter of improved dwellings for the working men—make them appear to pay well, how many *benevolent* individuals are ready to come forward to assist with their purses; knowing that in such case too much comfort cannot be supplied. Even gentlemen of the profession seem to hold *economy* more in view than any other point. It would seem as if one and all agree in making a broad distinction between the comforts of the poor and rich. We have now a model about to be submitted to the *world* at the Great Exhibition. I allude to that noticed in THE BUILDER of a few weeks since. Produce a list of high-sounding names to recommend a work, and anything will be gulped down by the people. I hope the intended plan is not to have a living-room with four doors opening into it, occupying two sides, and the window a third; two of the doors leading to bed-rooms, and an entrance to the principal bed-room through the scullery. Gentlemen, I am sorry to say, frequently bestow more expence on the plan of a hound-kennel than on the habitation of those to whom they are indebted for their every comfort. Building is not like an article of apparel,—a coat, for instance, where, if a gentleman pays five per cent. more, and should require two or three per annum, he would be paying ten or fifteen per cent. yearly; whereas the former being once well done, might not require any substantial repairs for perhaps a quarter of a century.—W. L.

WATER-PIPES IN FROST TIME.—At a meeting of the Royal Scottish Society of Arts, a paper was read by Mr. Macpherson, plumber, "On a method of preventing water-pipes from bursting during frost." Mr. Macpherson gave a full description of the means at present adopted to prevent this highly destructive occurrence, such as outside coverings of straw, rope-yarn, &c., to the pipes in exposed situations, and also the mode generally recommended of allowing the water to run or circulate partially through the pipes, all of which he demonstrated to be practically useless, and showed that the only effectual means of preserving pipes from the action of frost was simply to keep them empty. The difficulty, however, even in this, was the sudden and unexpected changes of temperature, which often in a single night froze the whole water contained in the pipes, rendering this precaution also useless, unless attended to with great care. He conceived it possible to employ some self-acting apparatus to shut off the water and empty the pipes, or to have a machine so constructed as to shut a cock at the freezing point of water (thirty-two degrees), and to reopen it when a rise of temperature took place. Water, as we all know, expands in freezing, and Mr. Macpherson applied this expansive principle to a small body of water confined in a better conductor of heat than the lead pipes, and in connection with a double-acting valve to shut off the water and empty the pipes.

EGYPTIAN ART AND SCENERY.—No scenery is grander in its impression, for none is so symbolical. This grand and solemn nature has imposed upon the art of the land the law of its own being and beauty. Out of the landscape, too, springs the mystery of Egyptian character, and the character of its art. Often, in a luminously blue day, as the Howadji sits reading or musing before the cabin, the stratified sand mountain-side, with a stately arcade of palms on the smooth green below, floats upon his eye through the serene sky as the ideal of that mighty temple which Egyptian architecture struggles to realise—and he feels that he beholds the seed that flowered at last in the Parthenon and all Greek architecture. The beginnings seem to have been the sculpture of the hills into their own forms,—vast regular chambers cut in the rock or earth, vaulted like the sky that hung over the hills, and, like that, starred with gold in a blue space. From these came the erection of separate buildings, but always of the same grand and solemn character. In them the majesty of the mountain is repeated. Man cons the lesson which Nature has taught him. Exquisite details follow. The fine flower-like forms and foliage that have arrested the quick sensitive eye of artistic genius, appear presently as ornaments of his work. Man, as the master, and the symbol of power, stands calm with folded hands in the Osiride columns. Twisted water reeds and palms, whose flowing crests are natural capitals, are added. Then the lotus and acanthus are wreathed around the columns, and so the most delicate detail of the Egyptian landscape re-appeared in its art. But Egyptian art never loses this character of solemn sublimity. It is not simple infancy, it was the law of its life. The art of Egypt never offered to emancipate itself from this character—it changed only when strangers came. Greece fulfilled Egypt. To the austere grandeur of simple natural forms, Greek art succeeded as the flower to foliage. The essential strength is retained, but an aërial grace and elegance, an exquisite elaboration followed; as Eve followed Adam. For Grecian temples have a fine femininenes of character when measured with the Egyptian. That hushed harmony of grace—even the snow-sparkling marble, and the general impression, have this difference. Such hints are simple and obvious—and there is no fairer or more frequent flower upon these charmed shores, than the revelations they make of the simple naturalness of primitive art.—*Nile Notes.*

CHESTER SAVINGS BANK COMPETITION.—A premium of 20*l.* having been offered for the best design for the Chester Savings Bank, there were seven competitors. The selection has fallen on Mr. James Harrison, of Chester. The selected design for the Savings Bank is in the Tudor style. In the elevation to Grosvenor-street there is a decorated entrance archway, with the city arms over it, and a parallel-parapet, enriched with shields, and terminating with gable ornament. In the front facing the bridge there are two gables and a large projecting bow-window corbelling out over the three-light lower window. The parapets are embattled and panelled. A clock tower rises from the parapet at the north-west angle, and is carried up square until it attains a sufficient elevation for the clock to be seen over the roof. Above the clock is an open octagonal lantern, crowned with a crocketed cupola terminating with a vane.

FIRE AT CONSTANTINOPLE.—The winter palace of the Sultan's brother-in-law, Mehemet Ali Pacha, has been consumed by fire. The loss is calculated at 150,000*l.*

TWISTING AND ROLLING IRON.—A patent specification has been enrolled by C. Harratt, of Royal Exchange-buildings, merchant, for making piles or fagots of iron for rolling into bars or plates for railway and other purposes, by coiling a rod or bar round a bundle of rods or bars, so as to lay the grain in different directions, and cause the fibres to be well interlaced.

TENDERS FOR DRAINAGE.—Herewith I forward the list of tenders supplied for drainage-pipes, to be supplied for the Rugby Local Board of Health, by reference to which it will be seen that builders are not the only persons who disagree in their calculations. The quantities were all supplied by Mr. T. W. Rammell:—

	£	H.	H.
Standing, Frankling, and Co...	3,080	0	0
Fernley Iron Company	2,875	7	1½
Thomas Smith	2,800	0	0
Spencer and Co.	2,151	2	3
Edward Brook	1,900	0	0
Henry Doulton and Co. (accepted)	1,900	0	0
Henry Walsall and Co. (schedule of prices)			

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